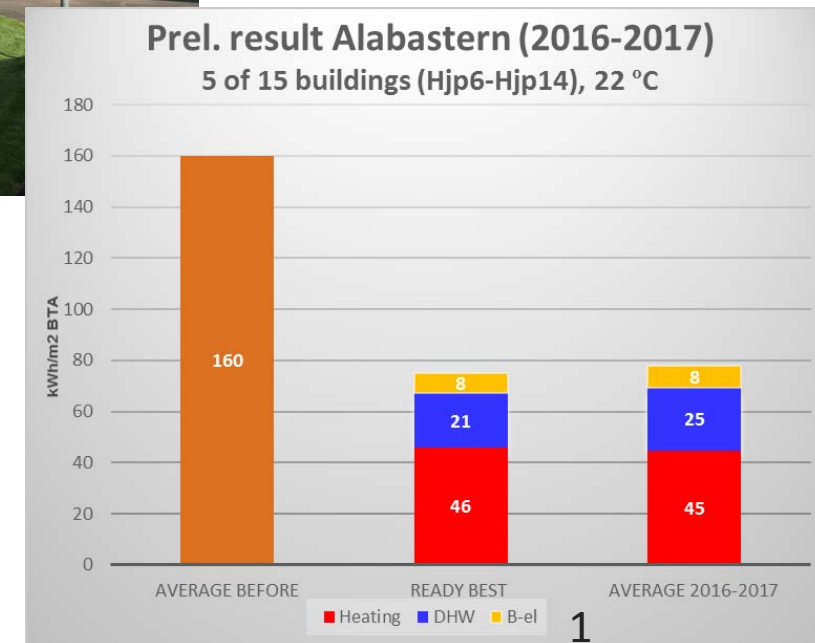


Summary

Sustainable retrofitting of buildings

- It is doable!
- Plan
- Make aware, provide training
- Procurement
- Monitoring, follow up
- Maintain



Summary - intro

- The energy used in building comprise a huge part of the total energy consumption in Denmark and Sweden
- Building energy use in Denmark and Sweden has been significantly reduced since 1960 due to the building energy regulations and will be reduced further
- Both countries are aiming for a significant reduction in CO₂ - reduction and high penetration of RE sources

Summary – building envelope

- The heat loss of buildings can be significantly reduced with retrofitting
- The heat consumption is significantly reduced by changing the windows, reinsulating and adding heat recovery to the ventilation.
- However, the impact of the reinsulation is very dependent on the current level of insulation
- Likewise, the full savings on using heat recovery on ventilation might not be obtained if the present ventilation rate is low.

Summary – building envelope

- Heat loss from distribution pipes can be significant.
- When looking at balconies, using 2 sets of 2 layer window can be better than using just one set of 3 layer

Summary

Building services installation - heat

- Both central and decentral heat distribution is used in Ringgaarden
- Waste water heat recovery/PVT modules with heat pump can cover **about 75% of the heat** needed for domestic hot water
- Low temperature heating can be implemented without changing the radiators and convectors
- District heating temperature can be lowered from 80 to 60 °C

Summary

Building services installation - electricity

- In Denmark, as much electricity as possible produced by PV should be used for self consumption
- Without batteries, 70% of the electricity produced will be sold to the grid
- With the batteries, 20% of the electricity produced will be sold to the grid
- Demand controlled ventilation can save up to **30%** on electricity consumption

Contacts



Morten Christensen
mns@cowi.com
Ph. 5640 7187 / 4176 7187



Reto Hummelshøj
rmh@cowi.com
Ph. 5640 2766 / 2964 7160



Stefan Olsson
Stefan.olsson@energikontorsydost.se
+46 709 890181

